EUROPEAN PATENT OFFICE

Patent Abstracts of Japan

PUBLICATION NUMBER : 10321809
PUBLICATION DATE : 04-12-98

APPLICATION DATE : 19-05-97
APPLICATION NUMBER : 09128450

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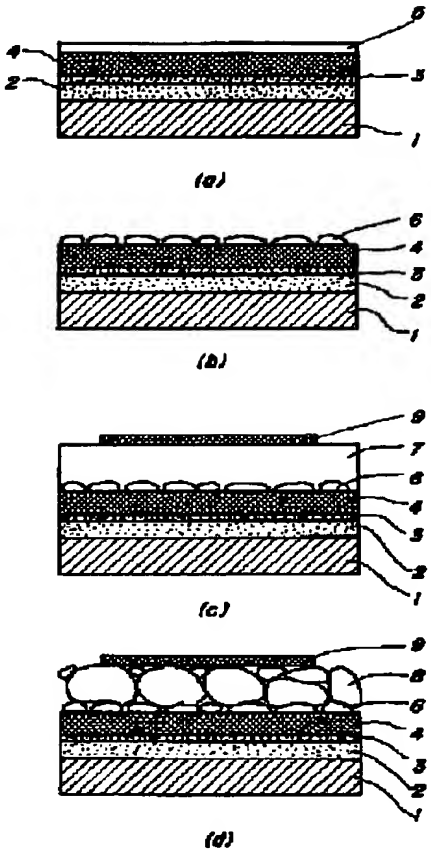
INT.CL. : H01L 27/10 H01L 27/04 H01L 21/822 H01L 27/108 H01L 21/8242 H01L 21/8247 H01L 29/788 H01L 29/792

TITLE : SEMICONDUCTOR STORAGE ELEMENT MANUFACTURING METHOD



ABSTRACT : PROBLEM TO BE SOLVED: To obtain a ferroelectric film of a dense crystal structure, capable of forming a ferroelectric film of dense crystal structure on the surface of a lower electrode, even in a Bi-layered structure compound, in which coarsened crystal grains are easily generated by separating crystallization steps into a plurality of stages.

SOLUTION: A Ti adhesive layer 3 and then a lower Pt electrode 4 are formed on a silicon substrate 1, having a silicon oxide film 2 formed by thermal oxidation. Next, on the lower Pt electrode 4, a layer of an MOD solution of $SrBi_2Ta_2O_9$ is coated. After having been subjected to a dry step, the $SrBi_2Ta_2O_9$ film is crystallized by a heat treatment at a substrate temperature of 600°C under a reduced pressure and oxygen atmosphere. Thereafter, coating and drying steps are repeatedly conducted three times on the $SrBi_2Ta_2O_9$ film 6 to provide the $SrBi_2Ta_2O_9$ film 6 with a desired film thickness by the MOD method and to turn the film 6 into an amorphous or microcrystal state by heat treatment. After an upper Pt electrode 9 is formed on the $SrBi_2Ta_2O_9$ film 7, the heat treatment is conducted at a substrate temperature of 600°C under a reduced pressure and oxygen atmosphere.